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ABSTRACT

A study examined present agricultural education programs in Antigua and made recommendations for needed improvements. Data for the evaluation were obtained from numerous documents and publications, field trips, and discussions with key officials in various ministries and institutions, including the Ministry of Agriculture, Ministry of Education, Antigua State College, and secondary schools in the country. Although it is clear that the present agricultural education program in Antigua is in urgent need of improvement, the currently existing general goals of self-reliance and proper use of land and other natural resources are not sufficient to plan a direction for the country's agricultural education program. Clear, specific national goals for both the short- and long-term improvement of instruction in the primary and secondary schools and teacher preparation must be formulated. Moreover, the importance of both education and agriculture to the development of Antigua should be reflected in the budgets of the two ministries responsible for each of these. (Appendixes to this report include a listing of documents reviewed by the researcher, data on present staffing and training needs in Antigua, and selected information concerning educational institutions and enrollment in them.) (MN)

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A report on:

DEVELOPING AND STRENGTHENING OF AGRICULTURAL EDUCATION IN ANTIGUA

(A study conducted during November 1984 at the request of the Caribbean Agricultural Extension Project in cooperation with the Ministry of Agriculture and the Ministry of Education.)

by

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"One approach rests on a different premise...that human resources, not material wealth as such, are the ultimate basis of wealth. The goal of development is thus maximum possible utilization of human resources in more productive activity and fullest possible development of the skills and knowledge of the labor force which are relevant to such activity."

Human Resources as the Wealth of Nations, p. 115

November 14, 1985
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DEVELOPING AND STRENGTHENING OF AGRICULTURAL EDUCATION IN ANTIGUA

Introduction

The consultant was asked to review the present situation, and make recommendations for improvement, of agricultural education in Antigua. This request came through the Caribbean Agricultural Extension Project and was in cooperation with the Ministry of Education and Ministry of Agriculture. The review was conducted during the period November 5-9, 1984.

Discussions were held with key persons in several organizations and institutions including the following:

Ministry of Agriculture
Ministry of Education
Antigua State College
Otto Comprehensive School
Jennings Secondary School
Training Officer
Marketing Board

Several documents were made available to the consultant as sources of information about the educational and agricultural situation in Antigua. Some of those documents were (for more specific information about sources, see Appendix A):

1. Educational Statistics, 1976-1978.
2. An Agricultural Policy for the State of Antigua and Barbuda.
3. The State of Antigua and Barbuda Education Sector Survey: Analysis of the Existing System and Recommendations for Its Development.

4. A set of unpublished tables of data about the Antigua educational system for the years 1982 and 1983.

5. Trained Manpower Needs in the Agricultural Sector Leeward and Windward Islands, 1976.

6. Training Needs in Agriculture in the Leeward and Windward Islands, 1983.

7. Human Resources as the Wealth of Nations

8. "Report (by Dick Miller) on Technical Assistance and Externship Assignment in Grenada and Antigua, West Indies."

The consultant was assisted in his work by Richard Miller, Extension Director, Wexford County, Michigan Cooperative Extension Service.

Agricultural Development and Education

Increasing the production of food and fiber to attain food self-reliance is a goal of many nations. The achievement of increased production, through increased productivity, requires contributions from more than the Ministry of Agriculture, even though the Ministry has a primary responsibility for matters pertaining to the agricultural sector.

Agricultural development is achieved, in part, through the development of other sectors: industry, manufacturing, housing, social services, etc. In other words, agricultural development is more likely to occur when other sectors are also developing.

Agricultural development, as well as development in the other sectors, is dependent upon human resource development. Harbison has made a persuasive case for considering human resource development to be a precursor to economic, social and

agricultural development. It is the people, who plan and implement plant, at the several levels, in both the private and government sectors, who ultimately achieve the development. For agriculture these people include the farmers; the suppliers of inputs and credit; the marketing and processing personnel; the researchers and extension workers; administrators and supervisors; the professional, technical and skilled workers. Without "able and willing" workers at the various levels, in the many jobs, it is difficult if not impossible to achieve agricultural development.

The formal schooling system is basic to human resource development. The schooling system is the means for providing all children and youths the opportunity to develop their innate abilities. The specialized areas of education, such as agricultural education, can enhance development through helping prepare persons to work and to contribute in that sector. For example if the goals for agricultural development place emphasis on small-scale, private sector agriculture, the teaching of agriculture through the schools can help prepare individuals to enter and advance in farming. The instructors through effective use of projects in crops and livestock, conducted on home farms as well as on school farms, can teach students to produce and market agricultural products efficiently; to conserve and use wisely the soil and water resources; to keep accurate records and use those records in making management decisions; to market crops and livestock; and to participate in community affairs.

Effective instructors in agriculture at the secondary school level can help provide interested and capable persons to enter off-farm occupations as well as to pursue careers in agriculture through advancing to higher levels of agricultural education.

However, teaching agriculture as a vocational subject requires qualified teachers; laboratories and equipment which are similar to the real working conditions; a curriculum based on the requirements for entering and advancing in the fields of agriculture; and the enrollment of students who have made a tentative choice of agriculture for a career.

The preparation of agriculturalists to serve in the many posts for teaching, research, administration and supervision requires more than secondary school level instruction in agriculture. Most of the agricultural posts in government, and many in agri-industries require intermediate and graduate level schooling. Certificates, diplomas, bachelor degrees and other degrees are the keys to entry into the technical and professional positions in agriculture.

These various levels of schooling are not sufficient. The persons in the posts, while working on-the-job, require opportunities for up-dating and up-grading their competencies. Harbison has described this human resource development as follows:

> "Human skills, knowledge, and work capacities can be developed in many ways. The most obvious is through formal education, beginning at the primary or first level, continuing with one of the various forms of secondary schooling, and then going on to higher education, such as colleges, universities and technical institutes. Of equal importance is on-the-job development through a wide variety of informal as well as systematic training within the working environment. In addition, individuals develop themselves through reading, independent study, observing and learning from others, and personal experience. (Harbison, page 14)

Summary of Observations and Discussions

The officials in all offices and schools were generous with their time and both open and frank in their discussions about the goals and the present situations for agricultural development and education. Attention of the consultants was called to numerous studies and reports in recent years regarding agricultural education in Antigua. The officials in both the Ministry of Agriculture and the Ministry of Education clearly indicated their interests in moving beyond the "study stage", and into the "action stage". Two studies in particular were cited for their relevance to the present study of agricultural education in the primary, secondary and tertiary schools.

First, the Edmunds study (Training Needs in Agriculture in the Leeward and Windward Islands) was completed in June 1983 but had not been discussed in either the Ministry of Agriculture or the Ministry of Education. Edmunds reported training needs in Antigua for the three-year period 1983-86 to include 32 graduate level and 76 intermediate level persons in government positions. In addition, Edmunds stated a need for agricultural education to begin in primary and secondary schools and for it to be taught as a science and as a business. (Additional information from the Edmunds manpower study plus information from the Henderson study completed in 1976 may be found in Appendix B.)

Second, a UNESCO report (The State of Antigua and Barbuda Education Sector Survey: Analysis of the Existing

System and Recommendations for Its Development) was completed in 1982. There was no evidence that it has been widely discussed or even circulated to some of the key persons who had been involved in the collection of data. Recommendations were made in the report for strengthening the teaching of agriculture at primary, secondary and tertiary levels in Antigua.

Other observations and discussions by the consultants included the following:

1. The demand for educated persons in agriculture generally was conceptualized in terms of persons to be employed in government positions. Agricultural education for persons entering farming (either part-time or full-time) or agri-business occupations was not mentioned even as an after-thought.
2. There was little or no evidence of commitment to the "planning process", i.e., field research (e.g., manpower study), problem identification, needs assessment, goal setting, strategy determination, generating funding proposals (both internal and external) and the follow-through of putting priorities and manpower to programs.
3. There are many unfilled positions in agriculture due to a lack of qualified persons. Part of this problem is due to the regional agencies such as CARDI hiring away native-born trained professionals for higher salaries and better career opportunities.

4. It was reported that during the period 1980-1984 20 persons were sent overseas for training in agriculture. At least seven of these were sponsored by CAEP, only two were identified as entering diploma programs, and one additional person possibly in a degree program. Participation in local training programs from June 1981 through October 1984 included 349 persons in 18 courses/seminars/demonstrations.
5. Agricultural development goals include expansion of livestock, vegetable and fruit production.
6. The amount of food imported has increased in recent years due in part to the extended droughts, the growing tourist industry and the shift of farmers into other occupations
7. There are serious marketing problems due to seasonal peaks in production.
8. A new agricultural census will be conducted soon. The 1974 census was never published.
9. Approximately 70 percent of the land is owned by the government. There are simple procedures for farmers to lease 5 acres or less but leases are on a one-year basis.
10. There may be a need, in spite of all the previous studies, to do a field study to gather primary data for a manpower needs assessment in the agricultural sector. (Note: This is to be distinguished from a "desk study" which generally utilizes secondary data).

11. Concern was expressed as to the inappropriateness for Antigua purposes of the requirement for five specific "0" level passes for entrance into E.C.I.A.F. (Eastern Caribbean Institute of Agriculture and Forestry).
12. The low level of interest shown by students and parents in the study of agriculture is believed to be a consequence of the low wages and low income from farming rather than simply a reflection of the historical plantation-slavery period.
13. There are now students in the schools who want to study agriculture.
14. Several (five) secondary schools are interested in preparing students for the CXC examination in agriculture.
15. Schools lack land, fencing (for security), water, equipment, storage facilities, and qualified teachers for teaching agriculture.
16. There is no person in the Ministry of Education specifically assigned to supervise the agricultural science program.
17. Some progress has been made in establishing the concept of comprehensive secondary schools. This is a concept which when fully implemented through (a) qualified teachers, (b) appropriate facilities and equipment, and (c) administrative support could serve the youth more effectively than the present schools.

18. Four out of every 10 secondary teachers in 1982-83 had no teacher training; and seven out of every 10 secondary teachers held no degree. (Nearly three out of every 10 had neither a degree nor teacher training).
19. At the primary school level, none of the 337 teachers held degrees; and about three out of every 10 (31%) had no teacher training.
20. There is a slight downward trend for enrollment in the primary and secondary schools. For the two years 1982/1983 there was an average of 8000 students per year in Forms I through V of which 40 percent were in the primary all-age schools.
21. Although the overall enrollment in Forms I through V is about equally divided, female and male (51.4% to 48.6%), the proportion of females is higher (55.2%) in the regular secondary forms.
22. The State College has programs in commercial, engineering and teacher preparation. It has no agricultural programs.
23. Students seeking entrance to the State College must pass a common entrance examination in mathematics and English. The number of applicants has increased in recent years and more facilities and equipment are needed to accommodate the demand for training.

24. There is some land adjacent to the State College which might be utilized for an agricultural program. The laboratories for biology and chemistry could be used. At least two additional classrooms, equipment, tools, and storage facilities would be needed if an agricultural program were added.

25. Some discussions have been held regarding arrangements between the MOE (Ministry of Education) and the MOA (Ministry of Agriculture) for part-time instructors as well as use of facilities and equipment for student practicals in vegetables, crops and livestock.

26. Agriculture in some secondary schools is a required subject in Forms I, II and III; it is an optional subject in Forms IV and V.

27. There is interest in having agricultural extension officers assist with technical advice and demonstrations in the schools. Some agricultural teachers reported they received the Agricultural News (a newsletter from the Ministry of Agriculture, Lands and Fisheries) and that it was helpful in their teaching.

28. There is a desire to have the MOA assist with the in-service training of agricultural teachers.

29. Antigua is a relatively new independent nation, small in size,and with a relatively small percentage of the population employed in agriculture, as shown below.

Year of independence	1981
Area: Square miles	171
(Square kilometers)	(442)
Area of arable land, Square miles	44
Population	80,000
GNP per capita (1982) US$	$1,740
Agriculture as % of GDP (1981)	6.0

30. The major constraints to expanding agricultural production, as reported by one source, were:

a. Absence of a land use plan
b. Deficiencies in land tenure system
c. Lack of sufficient and constant supply of water
d. Shortage of labor
e. Inadequate delivery of inputs and supporting services
f. Weak marketing system

Recommendations

There is a need for a strong agricultural education program in Antigua. The exact nature of the agricultural education program should be matched to both the societal goals for agricultural development and individual goals for career development. The recommendations which follow have been divided into three sections: General, Ministry of Agriculture, and Ministry of Education.

General. The general goals of food self-reliance, proper use of land and other natural resources, and others are not sufficient to plan a direction for the agricultural education program. The general statements about education provide neither a sufficient indication nor priorities to chart a course for agricultural education to meet the needs of society and individuals.

1. It is recommended that the national goals for both education and agriculture should be more clearly stated so as to provide a basis for planning both short-term goals and strategies to achieve those goals.
2. The basic educational program for children and youth in the primary and secondary schools should be strengthened through (a) improved teacher education and (b) improved facilities and equipment for instruction.
3. The rewards to persons employed in agricultural positions should be commensurate with their educational attainments and competitive with what they could earn in similar positions in other departments/ministries of Government.
4. The importance of both education and agriculture to the development of Antigua should be reflected in the budgets for those two ministries to be able to carry forward strong programs.

Ministry of Agriculture. Agricultural education should be viewed as a means to help achieve the societal goals for agriculture and agricultural development. The previous studies with recommendations for agricultural education clearly indicate the level of concern from external agencies for using educational programs to help achieve the national goals.

1. The priority assigned to small scale agriculture in Antigua needs to be further clarified as a means to achieve the goal of food self-reliance.
2. The shortage of qualified agriculturalists for unfilled positions in the MOA should be formally described and submitted to outside funding agencies for assistance through scholarships to prepare graduate (B.Sc.) and post-graduate candidates.
3. The pay scales for agriculturalists within the MOA should be raised so as to be equivalent to pay scales for persons with similar levels of education and levels of duties in other ministries.
4. The agricultural extension program should include plans for the frontline extension workers to provide assistance to primary and secondary schools. This assistance may take several forms:
   a. Assistance in planning school gardens.
   b. Assistance with appropriate varieties of plants for vegetable gardens and crops.
   c. Technical personnel should be provided for workshops to up-grade teachers of agriculture.
   d. Production of sufficient leaflets, bulletins and posters for distribution to the schools for use by the teachers.
   e. Continuation of distribution of the Newsletters to the schools.

5. Cooperate with the Ministry of Education to establish a diploma level program in agriculture at State College.

Ministry of Education. The inclusion of agricultural education within the curricula of the primary and secondary schools is very important. However, the instruction in agriculture can be most effective when there is a strong basic education. It is recommended that all steps be taken, as rapidly as possible, to strengthen the basic education program through teacher education, provision of appropriate environment for instruction, and instructional materials.

1. A supervisor of agricultural education should be appointed in the Ministry of Education. S/he should hold a B.Sc. degree in agricultural education as a minimum qualification.
2. Preparation of teachers of agriculture should be a very high priority.
    a. All teachers of agriculture for the secondar, level programme whether in the post primary Forms I-III or in secondary Forms I-V, should have graduate (B.Sc.) degrees in agricultural education. (This is a goal. For the immediate future all such teachers should hold at least the diploma in agriculture with professional training in education.)

b. Teachers in primary schools, who integrate agriculture in the science, social science and nutrition curricula, should have taken an optional program in agriculture as part of their teacher education program.

3. A set of policies and guidelines should be developed by the Ministry of Education for conducting instructions in agriculture (complementary to CXC) as a vocational program at the secondary level.

4. A series of workshops should be conducted during the holiday period over the next several years to provide assistance to primary teachers for teaching agriculture integrated with science, social science and nutrition.

5. One center for teaching agriculture should be developed in St. Johns to serve students in the several schools which cannot provide the land, livestock, and equipment for teaching agriculture. The center must have:

   a. land for student projects in vegetables and other crops;

   b. pens, equipment and stock for student projects with poultry, swine, cattle, goats, and rabbits;

   c. a classroom, tool storge, toilets, wash-up facilities, and storage for fertilizers, chemicals, seeds, etc; and

   d. small scale mechanized equipment and tools such as is appropriate for progressive, small-scale farmers.

6. All of the secondary level students outside of St. John's should be served by programs conducted by the individual schools (not in centers). Each school should have qualified instructors so that a program of vocational instruction can be developed using the school and community facilities.
   a. The instruction should be based on the requirements for entry and advancement in agricultural careers (farming, agri-business, government service, etc.)
   b. The tools and equipment provided should be consistent with the kinds of equipment appropriate for a modern, small-scale farmer in Antigua.
   c. Student projects conducted at school and at home should be utilized to teach competencies for planning, producing, marketing, and managing.
   d. The aims of instruction should include the teaching of LEADERSHIP, COOPERATION and COMMUNITY SERVICE in addition to the traditional goals of production, marketing and management.
7. A two-year diploma program in agriculture should be added to the curricula at the State College.
   a. The objectives of the program should be to prepare persons (male and female) to enter and advance in teaching positions, agriculture business, government service, and self employment in the

b. The curriculum and courses should be designed in close cooperation with the Ministry of Agriculture.

c. There should be a core staff of three full-time regular lecturers, supplemented by part-time teachers for special modules of instruction.

d. Relevant modules of instruction from the engineering commercial curricula should be utilized to strengthen the agricultural curriculum.

e. Two special classrooms will be required plus access to the biology and chemistry laboratories.

f. Land will be essential for crops, vegetables, and livestock so as to provide for student practicals.

g. Equipment will be required for use by students to learn how to operate, service and maintain the basic equipment for farming.

h. The curriculum should include appropriate instruction in communication, rural sociology and how farmers learn.

i. One of the three full-time teachers of agriculture should be designated as Coordinator of the program to provide leadership for (1) working with the supervisor of agricultural education in the Ministry of Education and (2) working with key persons wthin the Ministry of Agriculture. agricultural sector.

j. The intake of students should be limited to 15-20 per year. The qualifications for entrance should include the general test now required for entrance to State College plus other appropriate criteria (such as at least 3 "0" level passes or equivalent). Persons with outstanding performance on-the-job but perhaps lacking some academic qualifications should be given an opportunity to enter the program.

7. The primary schools should integrate the teaching of agriculture with science, social science, and nutrition. School gardens should be used to demonstrate appropriate varieties of vegetables, principles of science, and to teach positive attitudes toward agriculture.

8. The Ministry of Education should request cooperation from the Ministry of Agriculture for assistance in teacher in-service workshops, plant materials for teaching agriculture, and preparation of appropriate instructional materials (to teach relevant technology).

Strategy for Implementation

People are the keys to development. People have to develop the strategy, prepare the plans and implement plans. Therefore, the proposal for implentation of change in agricultural education places highest priority on the selection and training of key persons.

1. Request support for scholarships to prepare persons for service in the Ministry of Education.
   a. Six persons for B.Sc. in agricultural education
      1) One for a new post--supervisor of agricultural education
      2) Five for posts as teachers of agriculture in secondary schools
   b. Ten persons for diploma level training in agriculture with teacher training to become lead teachers in primary schools.
   c. Five persons to be provided 6-8 week study tour
      1) One person selected to give leadership to the development of the curricula and courses for the diploma program in the community college.
      2) Two persons (principal and key teacher) from the secondary school which is selected to be a pilot school for development of a vocational agriculture program.
      3) Two persons (principal and key teacher) from the primary school which is selected to be a pilot school for development of a vocational agriculture program in the all-age primary school Forms I, II and III.

Note: This personnel development program should be accomplished over a five to ten year period. There are not enough qualified persons available, who can be spared from their present posts, to attempt to implement this all at one time. The first phase should include the person for the supervisory post in the Ministry of Education and the five persons for 6-8 week study tours.

2. The development of the Diploma program at the State College should be done in cooperation with the Ministry of Agriculture and assistance requested from the Caribbean Agricultural Extension Project (CAEP). A timetable such as the following could be adopted with a goal of opening the doors for classes in the fall of 1986:

July 1, 1985	Ministry of Education request Ministry of Agriculture to second one person to begin preparing the Diploma program: objectives for the program, development of curriculum, and plans for facilities and equipment.
October 1, 1985	Request assistance for CAEP for a short-term consultant to assist with planning: objectives, selection of students, curriculum, courses, facilities and equipment.
July 1, 1986	Request Ministry of Agriculture to second a second person to teach courses. (The first person seconded would be expected to teach courses, also, starting in September 1986.) The two persons would have two months to prepare the teaching calendar, selection of students, arrangements for land and livestock, and lesson plans. (Note: More time is needed but the highest priority should be put on getting the program started with an expectation of providing in-service education to the two teachers.)

(These are but a few of the key kinds of activities which would need to be planned and financed in order to start a Diploma program which could become a high quality educational program.)

3. The Ministry of Agriculture should consider two kinds of activities with high priority. First, to take the necessary steps to upgrade the salaries of agricultural personnel to the equivalent of persons with similar educational levels and comparable jobs in other ministries.

   Second, to request scholarships to prepare persons for service in the Ministry of Agriculture. Six persons are urgently needed for training to the B.Sc. in agriculture for the highest priority areas such as specialists in general agriculture, veterinary services, and agricultural economics.

4. The Ministry of Education should move ahead with development of plans for two pilot programs at the secondary school level to demonstrate the teaching of agriculture with emphasis on student projects (supervised occupational experience programs), leadership, community service and community involvement. And for plans to strengthen the teaching of agricultue in the primary schools.
   One pilot program should be with a regular secondary school and the other should be with the agricultural program in an all-age primary school.

A short-term consultant (2-3 months) could be used to help develop plans for the pilot programs. The development of plans should involve parents, agri-business, school administrators and teachers, and the Ministry of Agriculture (extension service).

A consultant, such as Ronald Ramharacksingh, Assistant Director, E.C.I.A.F, and Head of Agricultural Teacher Education and Training Programme, could be used to assist with in-service education for the primary teachers as well as planning for the two pilot programs.

5. The Ministry of Education should move ahead with plans for one center, to teach agricultue in St. John's. Additional planning is needed to arrive at guidelines for the operation of the center.
   a. One consultant should be secured to work with a team, appointed by the Ministry of Education; involving persons from both the MOE and MOA.
   b. The national goals for both educational and agricultural development should be considered in the planning for selection of the site for the center; the kinds of crops and livestock as well as mechanization to be included in the instructional program; the number and level of students to be served; the relationship of the center to the community; etc.
   c. The planning could (should) be stage one for the development of the center.

APPENDIX A

List of Titles of Documents and Other Materials Reviewed by the Consultant

1. Educational statistics, 1976-1978, Antigua, compiled by Educational Statistics Unit, Ministry of Education, Health and Culture.

2. An Agricultural Policy for the State of Antigua and Barbuda, Ministry of Agriculxre, Lands and Fisheries, 1982, 25 pp.

3. The State of Antigua and Barbuda Education Sector Survey: Analysis of the Existing System and Recommendations for its Development. UNESCO, EFM/110, Report No. 21 (Reserved for the exclusive use of the Government of Antigua), Paris, May 1982, 49 pp. plus appendix and annexes.

4. A set of unpublished tables of data about the Antigua educational system for the years 1982 and 1983. Compiled by the Educational Statistics Unit, Ministry of Education, Health and Culture.

5. Training Needs in Agriculture in the Leeward and Windward Islands by J.E. Edmunds, June 1983.

6. Trained Manpower Needs in the Agricultural Sector Leeward and Windward Islands by T.H. Henderson. St. Augustine, Trinidad: The University of West Indies, Department of Agricultural Extension, 1976, 59 pp.

7. Human Resources as the Wealth of Nations by Frederick H. Harbison. New York: Oxford University Press, 1973, 173 pp.

8. National Extension Improvement Plan: Antigua, TSM-46, submitted to the Ministry of Agriculture for Discussion and Approval, September 1981, 32 pp. plus appendix.

9. Caribbean Agricultural Extension Project Phase II Proposal, 1983-1985, (A collaborative project of the Midwest Universities Consortium for International Activities, Inc., the University of the West Indies, the University of Minnestota, and the governments of Antigua, Belize, Dominica, Montserrat, St. Kitts/Nevis, St. Lucia, and St. Vincent funded by US/AID), 84 pp. plus Annexes A-E.

APPENDIX B

Present Staffing and Training Needs in Antigua:
A Comparison of Two Studies...1974-75 and 1983

Henderson Study...Data Collected December 1974-April 1975		Edmunds Study...Data Collected February-May, 1983	
Present Staff Resources:		**Staff in Post:**	
Graduate	9	23	Graduate
Intermediate	6	36	Local Trained
Untrained	16	21	Overseas Trained
Vacancies:		**Vacancies:**	
Graduate	5	6	Graduate
Intermediate	12	18	Intermediate
Additional 10-Year Needs:		**Staff in Training:**	
Graduate	13	2	Graduate
Inermediate	54	4	Intermediate
Projected Total 10-Yr. Needs:		**Projected 3-Yr. Training Needs:**	
Graduate	18	32	Graduate
Intermeidate	54	76	Intermediate

Sources: Henderson study (p. 54) and Edmunds study (p. 7). See Appendix A.

Notes:

1. The Henderson study included all technical and professional persons employed in both the public and private agricultural sectors. He included both the ministries of agriculture and education.

2. The Edmund study did not include teachers of agriculture. Otherwise, it included all technical and professional persons employed in agricultural positions in both the public and private agricutural sectors.

3. The Edmund study recommended that "at least one of the Windward Islands and as the demand dictates one of the Leeward Islands should develop the capabilities to offer Certificates in Agriculture of a regional standard." (p. 35) In addition,

Edmunds "recommended that a major Agricultural Training Centre for the Windward and Leeward Islands be established in St. Lucia as a matter of urgency." (p. 36) However, a subsequent study determined that a regional institution would not get support; support was indicated for national institutions with adaptation for specific agricultural conditions in each country.